What is claimed is:

1.   A design support system for supporting a design of a connection between a conductor and a connector terminal, comprising:

5   an estimation unit which learns beforehand a relationship between known connection data pertaining to connection design and unknown connection data pertaining to the connection design for the known connection data,

          wherein the estimation unit estimates the unknown
10 connection data pertaining to the known connection data in accordance with an input of the known connection data on the basis of the result of learning.

2.   The design support system according to claim 1, wherein
15 the estimation unit is constituted of a multilayer feedforward neural network in which layers formed of a plurality of neurons are coupled together in a direction in which the layers run from an input layer to an output layer by way of an intermediate layer.

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3.   The design support system according to claim 1, wherein, when the conductor and the connector terminal are connected together through crimping, the estimation unit performs learning beforehand while taking, as unknown connection data,
25 any of a crimp width and a crimp height, a compressibility of

the conductor in a direction of the crimp height, adhesion force

existing between the conductor and the connector terminal, and

contact resistance existing between the conductor and the

connector terminal, which are obtained after crimping.

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4.   The design support system according to claim 1, wherein

the estimation unit further comprises:

a C/W estimation unit which, when the conductor and the

connector terminal are connected together by crimping, performs

10 learning beforehand while taking the crimp width obtained after

crimping as the unknown connection data and produces crimp width

data by estimating the crimp width in accordance with an input

of the known connection data required for estimating the crimp

width; and

15   a C/H estimation unit which performs learning beforehand

while taking the crimp height obtained after crimping as the

unknown connection data and produces crimp height data by

estimating the crimp height in accordance with an input of the

known connection data required for estimating the crimp height,

20   wherein the crimp width data produced by the C/W estimation

unit are input to the C/H estimation unit as at least a portion

of the known connection data required for estimating the crimp

height.

25 5.   The design support system according to claim 4, wherein

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the estimation unit further comprises:

a compressibility estimation unit which performs learning beforehand while taking a compressibility of a conductor in the direction of a crimp height obtained after crimping as the

5 unknown connection data and which estimates the compressibility in accordance with an input of the known connection data required for estimating the compressibility,

wherein the crimp width data produced by the C/W estimation unit and the crimp height data produced by the C/H estimation

10 unit are input to the compressibility estimation unit as at least a portion of the known connection data required for estimating the compressibility.

6.   The design support system according to claim 5, wherein

15   the estimation unit further comprises an adhesion force estimation unit which performs learning beforehand while taking adhesion force existing between the conductor and the connector terminal after crimping as the unknown connection data and which produces adhesion force data by estimating the adhesion force

20 in accordance with an input of the known connection data required for estimating the adhesion force, and

the crimp width data produced by the C/W estimation unit, the crimp height data produced by the C/H estimation unit, and the compressibility data produced by the compressibility

25 estimation unit are input to the adhesion force estimation unit

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as at least a portion of the known connection data required for estimating the adhesion force.

7. The design support system according to claim 5, wherein the estimation unit further comprises:

a resistance estimation unit which performs learning beforehand while taking contact resistance existing between the conductor and the connector terminal after crimping as the unknown connection data and which produces contact resistance data by estimating the contact resistance in accordance with an input of the known connection data required for estimating the contact resistance,

wherein the crimp width data produced by the C/W estimation unit, the crimp height data produced by the C/H estimation unit, and the compressibility data produced by the compressibility estimation unit are input to the resistance estimation unit as at least a portion of the known connection data required for estimating the contact resistance.

8. The design support system according to claim 4, further comprising an input unit for manually inputting crimp width data to be input to the estimation unit as the known connection data so as to become equal to the crimp width data produced by the C/H estimation unit.

9.   The design support system according to claim 5, further comprising:

a sequential output unit which sequentially outputs, as the crimp height data, the crimp height data and a predetermined

5   number of discrete values existing in a predetermined range centered on the crimp height data in accordance with an input of the crimp height data produced by the C/H estimation unit.

10.   The design support system according to claim 1, wherein,

10   when the conductor sheathed with an insulation cladding is connected to a slot formed in the connector terminal through press-fitting, the estimation unit performs learning beforehand while any of the slot width obtained before press-fitting, a crimp height representing a height from a base

15   of the slot to the center of the conductor obtained after press fitting, load exerted on the conductor, withdrawal force exerted between the conductor and the connector terminal, and contact resistance existing between the conductor and the connector is taken as unknown connection data.

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11.   The design support system according to claim 1, wherein, when the conductor sheathed with an insulation cladding is connected to and press-fitted into a slot formed in the connector terminal, the estimation unit further comprises

25   a slot width estimation unit which performs learning

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beforehand while taking the slot width obtained before press-fitting as the unknown connection data and which produces slot width data by estimating the slot width in accordance with an input of the known connection data required for estimating

5 the slot width; and

a crimp height estimation unit which performs learning beforehand while taking the crimp height from the base of the slot to the center of the conductor obtained after press-fitting as the unknown connection data and produces crimp height data

10 by estimating the crimp height in accordance with an input of the known connection data required for estimating the crimp height,

wherein the slot width data produced by the slot width estimation unit are input to the crimp height estimation unit

15 as at least a portion of the known connection data required for estimating the crimp height.

12.   The design support system according to claim 11, wherein the estimation unit further comprises a load estimation

20 unit which performs learning beforehand while taking load exerted on the conductor after press-fitting as the unknown connection data and which produces load data by estimating the load in accordance with an input of the known connection data required for estimating the load, and

25   the slot width data produced by the slot width estimation

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unit and the crimp height data produced by the crimp height
estimation unit are input to the load estimation unit as at
least a portion of the known connection data required for
estimating the load.

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13.   The design support system according to claim 12, wherein
       the estimation unit further comprises a withdrawal force
estimation unit which performs learning beforehand while taking
withdrawal force exerted between the conductor and the connector
10 terminal after press-fitting as the unknown connection data
and which produces withdrawal force data by estimating the
withdrawal force in accordance with an input of the known
connection data required for estimating the withdrawal force,
and

15   the slot width data produced by the slot width estimation
unit, the crimp height data produced by the crimp height
estimation unit, and the load data produced by the load
estimation unit are input to the withdrawal force estimation
unit as at least a portion of the known connection data required
20 for estimating the withdrawal force.

14.   The design support system according to claim 12, wherein
       the estimation unit further comprises a resistance
estimation unit which performs learning beforehand while taking
25 contact resistance existing between the conductor and the

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connector terminal after press-fitting as the unknown

connection data and which produces contact resistance data by

estimating the contact resistance in accordance with an input

of the known connection data required for estimating the contact

5   resistance, and

the slot width data produced by the slot width estimation

unit, the crimp height data produced by the crimp height

estimation unit, and the load data produced by the load

estimation unit are input to the resistance estimation unit

10   as at least a portion of the known connection data required

for estimating the contact resistance.

15.   The design support system according to claim 11, further

comprising:

15   an input unit for manually inputting slot width data to

be input to the estimation unit as the known connection data

so as to become equal to the slot width data produced by the

slot width estimation unit.

20   16.   The design support system according to claim 12, further

comprising:

a sequential output unit which sequentially outputs, as

the crimp height data, the crimp height data and a predetermined

number of discrete values existing in a predetermined range

25   centered on the crimp height data in accordance with an input

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of the crimp height data produced by the crimp height estimation unit.

17.   The design support system according to claim 11, further comprising a sequential output unit which sequentially outputs, as the slot width data, the slot width data and a predetermined number of discrete values existing in a predetermined range centered on the slot width data in accordance with an input of the slot width data produced by the slot width estimation unit.

18.   The design support system according to claim 1, further comprising:

a sequential output unit which sequentially outputs, as the known connection data, the known connection data and a predetermined number of discrete values existing in a predetermined range centered on the known connection data in accordance with an input of the connection data.